

Public Review Draft

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Draft Restoration Plan and Environmental Assessment Addendum



**Sharon Steel Natural Resource
Restoration Plan**

Salt Lake County, Utah

Prepared by:

**Sharon Steel Natural Resource
Trustees**

U.S. Department of the Interior
Fish and Wildlife Service

State of Utah - Department of
Environmental Quality



Executive Summary

What Restoration Project is Being Proposed?

This Draft RP/EA Addendum presents an update to the City of West Jordan Natural Habitat Restoration Project (Big Bend Project), originally selected by the Sharon Steel Trustees in the 1998 Sharon Steel Final RP/EA and proposes using the remaining Sharon Steel restoration funds to support this updated project. The Draft RP/EA addendum also considers three restoration alternatives, including a No Action alternative for the Portland Cement restoration funds. After evaluating the alternatives, and based on the anticipated ecological and recreational benefits to the Jordan River, project cost-effectiveness, and the overall need for restoration along the Jordan River, the Portland Cement Trustees identified the Big Bend Project as the preferred alternative.

Project Background

From the 1870's to the mid-20th century, the Salt Lake Valley was a mining and milling center, where ores from Big and Little Cottonwood Canyons on the east side of the valley were processed into steel, silver, lead and other products. The Sharon Steel Mill and Midvale Slag Sites (Sharon Steel), located on the eastern side of the Jordan River in the town of Midvale, were part of a complex of mills and smelters owned and operated by United States Smelting, Refining and Mining Company.

In addition to damages resulting from the Sharon Steel Sites, the Portland Cement Kiln Dust Sites (Portland Cement) assessments have been evaluated in this document. The Portland Cement Sites consist of 5 separate locations in Salt Lake City and northern Salt Lake County, where environmental contaminants were released into the environment. Approximately 500,000 cubic yards of cement kiln dust originating from the Portland Cement Plant in Salt Lake City were deposited at the 5 locations as fill material between 1963 and 1983. Collectively, the sites resulted in a legacy of contamination that was eventually addressed through remedial actions by regulatory agencies. Unfortunately, site operations and cleanup activities and subsequent development resulted in the loss of riverine, wetland, and other valuable wildlife habitat in addition to other natural resource injuries described in this document.

In addition to the response and clean-up effort by regulatory agencies, the State of Utah (State) and the U.S. Department of the Interior (DOI) initiated Natural Resource Damage Assessments (NRDAs) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) at the Sharon Steel and Portland Cement Sites. These NRDA's assessed and quantified the natural resource injuries and losses from site releases to determine natural resource damages appropriate to compensate for such injuries. In 1990, the State and DOI were awarded a \$2.3 million natural resource damage (NRD) settlement under CERCLA (42 U.S.C. § 9601 et seq.) to compensate the public for injury to natural resources and their services that resulted from Sharon Steel. The State and DOI serve as the natural resource trustees for the Sharon Steel and Midvale Slag Sites (Sharon Steel Trustees).

Executive Summary (continued)

Additionally, through a separate series of bankruptcy settlements and prospective purchaser settlement agreements (1995 through 1999), DOI was awarded \$220,000 to compensate the public for injuries that occurred to natural resources from the release of hazardous substances associated with Portland Cement Kiln Dust Sites 1 through 5 under CERLA. DOI serves as the only natural resource Trustee for the Portland Cement Kiln Dust sites (Portland Cement Trustee).

This Draft Restoration Plan (RP) Environmental Assessment (EA) Addendum (Draft RP/EA Addendum) updates the original Sharon Steel Natural Resource Restoration Plan published in 1998 and serves as the restoration plan for the Portland Cement Kiln Dust Site. This Draft RP/EA Addendum was prepared by the Sharon Steel and Portland Cement Trustees (collectively, Trustees) to address natural resource injuries at the Sharon Steel and Midvale Slag Sites, and the Portland Cement Kiln Dust Sites.

The purpose of this Draft RP/EA Addendum, is to update the third project proposed in the 1998 Sharon Steel Natural Resource Restoration Plan (the City of West Jordan Natural Habitat Restoration Project, also known as the “Big Bend” Project) to address natural resource losses from Sharon Steel; and to propose providing funding to the Big Bend Project as the preferred alternative for Portland Cement. This Draft RP/EA Addendum also incorporates by reference a Draft Environmental Assessment completed by the Utah Reclamation Mitigation and Conservation Commission (Big Bend EA) (URMCC 2018) for the proposed preferred alternative.

What Natural Resources Were Injured?

Heavy metals, such as lead, cadmium, and arsenic from the facilities were present at the Sites in waste materials. Wastes were transported into portions of the Jordan River and its floodplain both adjacent to and downstream of the Site facilities. Dead birds were discovered at the Sharon Steel tailings ponds where waterfowl and other migratory birds would rest in migration. In addition to bird mortality, contamination of the Jordan River and nearby wetlands resulted in reduced quality of fish and wildlife habitat

What are the Benefits and Potential Adverse Impacts?

Features such as trails, boardwalks, viewing platforms, and informational signage would connect people with nature along the Jordan River Trail. A proposed on-site urban fishery would help to focus recreation in area adjacent to the main Jordan River Trail, minimizing human impacts on the remainder of the Site while still providing recreation opportunities. These facilities would be concentrated on the western side of the Site with a series of side trails to access the fishery. The eastern side of the Site would be restored for the primary benefit of migratory birds and other wildlife. The river corridor and the land to the east (between the new and old Jordan River channels) would be restored to create a riparian gallery forest consisting of a majority of native tree and shrub species.

Executive Summary (continued)

In addition, upland habitats would be restored between the new and old channels that will provide habitat for migratory birds and other wildlife, as well as shade portions of the restored river segment.

There are no significant adverse impacts anticipated from implementing the project. Construction activities may result in short-term and minor impacts to water quality, and construction equipment may temporarily result in a noticeable increase in noise to passers-by and residents living to the west of the project Site. Approximately 70% of the project area would be disturbed during construction, but restoration activities would enhance natural resource functions and conditions to above baseline conditions.

How will the Proposed Project be Funded?

The Big Bend Project is being funded by numerous sources in addition to the Sharon Steel and Midvale Slag Sites and the Portland Cement Kiln Dust Sites NRD settlement funds. Approximately \$805,000 of settlement funds would be used to implement restoration, and approximately 12% of this total (\$100,000) would be reserved for monitoring and adaptive management at the Big Bend Project. The remaining funds would be sought from a variety of local, state, federal, and private sources.

Abbreviations and Acronyms

ACOE	U.S. Army Corps of Engineers
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CKD	Cement Kiln Dust
DOI	U.S. Department of the Interior
DPR-EA	Detailed Project Report-Environmental Assessment
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
GSLA	Great Salt Lake Audubon
JRC	Jordan River Commission
JRMBR	Jordan River Migratory Bird Reserve
JRT	Jordan River Trail
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization
NPL	National Priorities List
NPS	National Park Service
NRDAR	Natural Resource Damage Assessment and Restoration
PRPs	Potentially Responsible Parties
RFP	Request for Proposals
ROD	Record of Decision
RP	Restoration Plan
RP/EA	Restoration Plan and Environmental Assessment
RTCA	Recreation Trails and Conservation Assistance
UDAF	Utah Department of Agriculture and Food
URMCC	Utah Reclamation Mitigation and Conservation Commission
USC	United States Code
USFWS	United States Fish and Wildlife Service
WRDA	Water Resources Development Act

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1. INTRODUCTION

This Draft Restoration Plan and Environmental Assessment Addendum (Draft RP/EA Addendum) for the Sharon Steel Natural Resource Restoration has been prepared by state and federal natural resource trustees responsible for restoring natural resources and resource services injured by hazardous substances from Sharon Steel, Midvale Slag, and Portland Cement operations in Salt Lake County, Utah. The natural resource Trustees include the U.S. Department of the Interior (DOI), the U.S. Fish and Wildlife Service (the Service), and the State of Utah (State). This document is an addendum to the original final Sharon Steel Natural Resource Restoration Plan (SSRP) (USFWS 1997). This document also serves as the natural resource restoration plan for the Portland Cement Kiln Dust sites.

The trustees for Sharon Steel and Midvale Slag have prepared this Draft RP/EA Addendum to propose funding the city of West Jordan Natural Habitat Restoration Project (Big Bend Project) with the remaining settlement balance for Sharon Steel and Midvale Slag held in DOI's Natural Resource Damage Assessment and Restoration (NRDAR) Fund. The trustee for the Portland Cement Kiln Dust sites also proposes using NRDAR settlement funds from the Portland Cement Kiln Dust sites for the Big Bend Project.

1.1. Background

In 1990, the State and the DOI acting on behalf of the Service were awarded a \$2.3 million natural resource damage settlement under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; 42 USC 9601 *et seq.*) to compensate the public for injury to natural resources and their services that had resulted from the release of hazardous substances at the Sharon Steel and Midvale Slag "Superfund" sites in the Salt Lake Valley. The State and DOI serve as the natural resource trustees for the Sharon Steel and Midvale Slag sites (Sharon Steel Trustees). Additionally, through a separate series of bankruptcy settlements and prospective purchaser settlement agreements (1995 through 1999), DOI was awarded \$220,000 to compensate the public for injuries that occurred to natural resources from the release of hazardous substances associated with Portland Cement Kiln Dust sites 1 through 5. DOI serves as the natural resource trustee for the Portland Cement Kiln Dust sites (Portland Cement Trustee).

This Section provides further background on the history of the Sharon Steel and Midvale Slag settlement, restoration project selection, current status of projects implemented, and a proposed final restoration project. This section also provides a brief background on the Portland Cement site, including a discussion of the natural resource injuries and the natural resource damages settlement.

1.2. Sharon Steel and Midvale Slag

The Sharon Steel Mill (Sharon Steel) and Midvale Smelter and Slag operation (Midvale Slag) sites are located in the municipalities of West Jordan and Midvale in the Salt Lake Valley. The two sites were originally a single facility owned and operated by United States Smelting, Refining, and Mining. Sharon Steel operated as a custom ore milling facility from 1906 to 1971, and ores processed at the site supplied the Midvale Smelter and several other smelters. The mill

was closed in 1971 when it was purchased by the Sharon Steel Corporation. The Sharon Steel site consisted of about 270 acres containing an estimated 12 million tons of mine tailings varying in depth from 1 to 60 feet. Lead, arsenic, cadmium, zinc, nickel, mercury, and other heavy metals were released from the site via water infiltration and runoff, and deposition of airborne particulate. Midvale Slag, located immediately north of the Sharon Steel site, was a smelting and metals production facility that operated from about 1902 to 1958. The site encompassed about 300 acres and was contaminated with smelter-related wastes.

Both the Sharon Steel and Midvale Slag operations were located on the west bank of the Jordan River. Aerial photographs taken in 1927 show tailings from Sharon Steel had been deposited in the Jordan River floodplain and were eroding into the river. In the 1950's, the Jordan River was channelized and routed to the west around the Sharon Steel site. By 1965, tailings from Sharon Steel had completely buried the old Jordan River channel. Tailings ponds created in and near the old Jordan River channel during mill operations were covered with shallow water that attracted large numbers of waterfowl during migration. Slag from the Midvale Smelter was also placed directly into the Jordan River floodplain. In 1975, a series of sewage lagoons were developed in a wetland complex location on the north end of the Midvale Slag site, and were used for treating waste until 1985 when the lagoons and the majority of the original wetland were filled. The U.S. Environmental Protection Agency (EPA) placed Sharon Steel on the Superfund National Priorities List (NPL) in 1990, and Midvale Slag was placed on the NPL in 1991 (EPA 2012)

Hazardous substances from Sharon Steel and Midvale Slag caused injury to migratory birds and their habitats along the Jordan River through heavy metal contamination that adversely impacted both birds and the biotic components of their habitat (riparian vegetation and food chain components such as aquatic plants, fish and invertebrates) (USFWS 1997). Several hundred acres of riverine wetlands were buried by tailings and slag, and remaining wetlands on the Sharon Steel site were heavily contaminated the site was capped. Erosion and deposition of tailings and slag into the Jordan River contaminated river sediments downstream from the sites. Contamination of groundwater resources underlying both sites made it impossible to clean and restore the onsite wetlands that had once existed.

1.2.1. Natural Resource Damages Settlement

In 1990, the Sharon Steel Trustees were awarded a \$2.3 million damage settlement to compensate for injuries to natural resources caused by releases of hazardous substances from Sharon Steel and Midvale Slag Superfund sites located along the Jordan River. This settlement resolved claims under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; 42 USC 9601 *et seq.*), and authorized the Sharon Steel Trustees to restore, rehabilitate, replace, or acquire the equivalent of those natural resources that were injured. Pending development of a plan to restore these resources, the settlement funds were deposited into a site-specific account within the NRDAR Fund. The Sharon Steel Trustees then entered into a memorandum of understanding (MOU), executed in July 1991, to ensure coordination and cooperation in the development of a plan to restore the injured resources. The Regional Director of Region 6 of the U.S. Fish and Wildlife Service (the Service) was designated to act on behalf of the Secretary as DOI's authorized natural resource trustee to restore injured DOI trust resources, in this case migratory birds and their habitats. The Executive Director of Utah's Department of Environmental Quality was designated to manage and protect natural resources

for which damages were recovered on behalf of the State. Pursuant to the MOU, the Sharon Steel Trustees agreed to plan and implement restoration for migratory birds and their habitats using the settlement funds (Sharon Steel Trustees 1991). The Sharon Steel Trustees agreed to form a committee to develop a restoration plan, solicit and select qualifying projects, and implement restoration. In 1995, the Sharon Steel Trustees issued the Sharon Steel Natural Resource Restoration Plan: A Concept Document (USFWS 1995). This document, also referred to as the Conceptual RP, identified the following restoration project goals:

- To restore, enhance, replace, and/or protect appropriate natural, functioning habitats along the Jordan River corridor for the benefit of trust resources;
- To ensure that restoration funds are used to provide the maximum benefit for trust resources; and
- To ensure the project provides benefits to the trust resources in perpetuity.

The 1995 Conceptual RP also incorporated evaluation under the National Environmental Policy Act (NEPA). Under this analysis, the three following planning alternatives were identified:

- Natural Recovery (No Action; Alternative 1)
- Restoration on the Sharon Steel/Midvale Slag Superfund Sites (Alternative 2)
- Jordan River Corridor Replacement/Enhancement of Migratory Bird Habitat (Alternative 3)

On-site restoration (Alternative 2) was not chosen because post-remediation conditions at Sharon Steel and Midvale Slag did not support this alternative, with wastes capped in place at Sharon Steel (with a low-permeability soil cap topped by non-woody vegetation), and redevelopment to mixed commercial/residential use chosen as the remedy component at Midvale Slag. Jordan River Corridor Replacement/Enhancement of Migratory Bird Habitat (Alternative 3) was chosen as the preferred alternative because of its proactive and relatively cost effective nature. To implement this alternative and the identified restoration goals, the 1995 Conceptual RP, which also served as a request for proposals (RFP), identified the following 13 criteria by which restoration project proposals would be reviewed and ranked:

1. Restoration of Trust Resources
2. Location of Restoration Project(s)
3. Ownership/Management
4. Surrounding Land Use
5. Size of Individual Projects
6. Restoration Longevity
7. Project Cost/Benefits
8. Project Hazards-Attractive Nuisance Issues
9. Cooperative Projects
10. Natural Recovery Potential
11. Annual Maintenance Requirements
12. Compliance with Applicable Laws and Regulations
13. Other associated ranking factors including threat of additional trust resource loss, public health and safety, and community acceptance

In response to the RFP, proposals were submitted by a number of entities including local governments and non-governmental organizations (NGOs). After evaluation and ranking according to the above criteria, three proposals were selected to implement the preferred alternative:

- City of South Jordan Riverway Wildlife Enhancement Project
- Great Salt Lake Audubon-TreeUtah Migratory Bird Habitat Restoration Project
- City of West Jordan Natural Habitat Restoration Project (Big Bend Project)

These projects were detailed in the final Sharon Steel Restoration Plan (USFWS 1997). Following a 30-day public comment period, the selected projects were funded through cooperative agreements with the Service, which also assumed the lead role in project management and implementation, monitoring and contract oversight. The history and current status of each of these projects are summarized below.

1.2.2. City of South Jordan Riverway Wildlife Enhancement Project

The City of South Jordan’s project proposed restoring a site on the east bank of the Jordan River, south of 10600 South Street, approximately 3 miles upstream from the Sharon Steel site (Figure 1). The project was to be centered on a 34-acre parcel of land in the Jordan River floodplain on the east side of the river that the city had acquired as a part of a development agreement. The project was also proposed to include acquisition of properties in the project area by a key project cooperator, the Utah Reclamation, Mitigation and Conservation Commission (the Mitigation Commission or URMCC). The Mitigation Commission is a federal commission tasked with implementing the environmental mitigation obligations of the Central Utah Project (a large federal water project) under the Central Utah Project Completion Act of 1992. Their purchase of conservation lands along the Jordan River was done as mitigation for impacts to aquatic habitats and resources caused by the development of water projects in the in the Provo-Jordan River watershed. The City’s proposal also included properties that the city said it would acquire in fee title, or on which it would acquire conservation easements. The total proposed project area was 116 acres, with a 60-acre core area designated as a “Wildlife Preserve”, and the remaining 56 acres designated as a “Buffer Zone” to be managed as a wildlands park and to include a constructed wetland for stormwater treatment. The projected cost for the project was \$4.3 million, with \$538,000 to be provided by the Sharon Steel Trustees.

Following the award of Sharon Steel funds in 1997, South Jordan began site-specific restoration planning on their 34-acre parcel, as well as on an adjacent parcel to the north that had been acquired by the Mitigation Commission. The Mitigation Commission purchased a conservation easement on the city’s parcel at this time, as well as water rights to a tributary of the Jordan River (Willow Creek) that had formerly flowed across the project area before joining the Jordan River, but had since been diverted into a ditch that delivered the water straight to the river on the south boundary of the project area. The city’s restoration plan proposed to construct a meandering channel for Willow Creek across the floodplain parcels, which would increase aquatic habitat on the site as well as provide sub-irrigation for native vegetation planted in the riparian zone along the creek margins. However, following a change in city leadership in 2000, the city’s restoration project managers were unable to obtain funding or support from the city government to acquire the other properties or to secure conservation easements on them. The

Service and the City were unable to resolve this situation through a series of meetings and discussions, and the Service terminated the cooperative agreement with the city of South Jordan in 2000 and withdrew the remaining project funds. However, the positive outcome from this project was that 16.2 acres of land in the project area were acquired by the Mitigation Commission, along with the conservation easement on the city's 31-acre parcel, for a total of 47 contiguous acres along the east bank of the Jordan River. In 2005, the Great Salt Lake Audubon Society (GSLA) agreed to pursue restoration on these lands as part of a second cooperative agreement with the Service (see below).



Figure 1. South Jordan Riverway Wildlife Enhancement Project. Project area proposed in 1998 (80 acres). Photo from 2004.

1.2.3. Great Salt Lake Audubon-TreeUtah Migratory Bird Habitat Restoration Project

The Great Salt Lake Audubon (GSLA)'s project proposed to restore 73 acres of undeveloped floodplain lands on the east side of the Jordan River north of 10600 South Street (Figure 2), which they named the "Jordan River Migratory Bird Reserve" (JRMBR). As proposed, this was to be a coordinated effort with the City of South Jordan's project (see above) to restore a large (189 acres) contiguous portion of the Jordan River floodplain. The total budget of GSLA's proposal was \$2.4 million, with \$625,675 requested from the Sharon Steel settlement funds, and approximately \$1.7 million in matching funds and in-kind contributions. Key cooperators with GSLA were the Mitigation Commission, acting to acquire the properties, and TreeUtah, a non-profit organization with the mission to connect people with nature by organizing groups of volunteers to plant trees and perform other on-the-ground restoration work. Although the owners

of a 10 acre parcel included in GSLA’s proposal decided not to participate, between 1997 and 2002, GSLA completed the tasks they had proposed on 63 acres of floodplain.

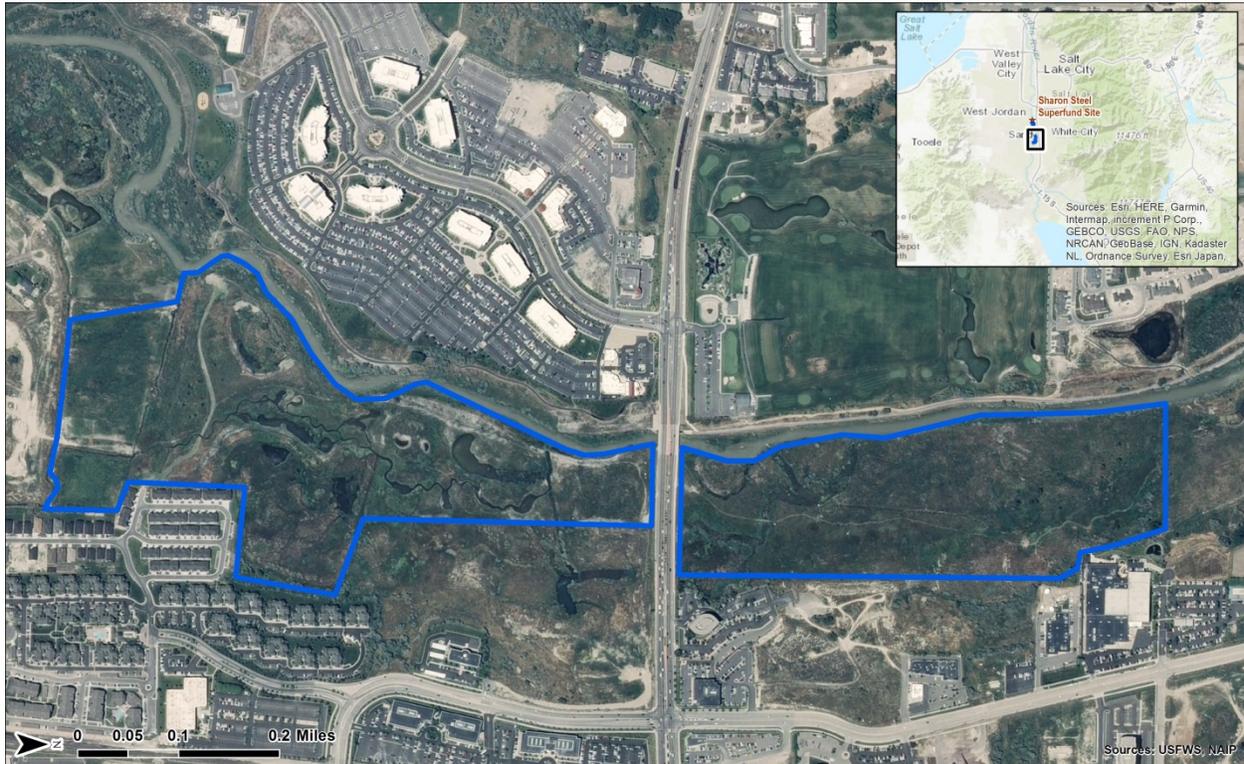


Figure 2. Great Salt Lake Audubon-Tree Utah Jordan River Migratory Bird Reserve. Project area as implemented. Total area about 180 acres. Photo taken in 2009, after Willow Creek Restoration had been completed (on the southernmost parcel on left of photo).

In June of 2004, the Service and GSLA executed a second five-year agreement to take on the restoration tasks that had not been completed by the City of South Jordan (see Section 1.2.2), as well as to pursue additional restoration on the parcels that had been included in their previous proposal. With this second agreement, GSLA took on the responsibility of restoring and managing almost 140 contiguous acres of floodplain. The Service provided \$471,630 for this effort. GSLA and TreeUtah again contributed a large amount of in-kind services through the efforts of their volunteers and donors. The scope of work for this second effort, which included the city of South Jordan’s proposed Willow Creek restoration, was completed in 2009. However the the Service and GSLA determined that the completion of additional restoration work would secure the long-term viability and management of the restored area, consequently, a third 5-year agreement between GSLA and the Service was executed in 2010 using \$109,000 of the Sharon Steel settlement. Because GSLA supported this project primarily with volunteer labor from 1995-2015, the majority of the total of \$1.2 million of Sharon Steel funds allocated to this project were used for “on the ground” restoration. The Mitigation Commission provided support including design and construction of over a mile of tributary stream riparian habitat (Willow Creek) on the floodplain. Sharon Steel funds and Service support were used for removal of non-native trees such as Russian olive and tamarisk, planting and maintaining over 100 contiguous acres of native trees and shrubs, and providing input over 15 years of active management and maintenance. At the end of the restoration phase of this project, GSLA had planned to acquire the properties from the Mitigation Commission, and establish an endowment to provide funding

for long-term operation and maintenance of the JRMBR. However, in 2014 the GSLA's Board of Directors made the decision that these responsibilities were beyond the capacity of their organization, and responsibility for management of the site was relinquished to the Mitigation Commission, who are currently managing the site consistent with the long-term goals of the SSRP. The GSLA also donated 12-14 acres of land on the south end of the project area that they had acquired to the Mitigation Commission.

1.2.4. City of West Jordan Natural Habitat Restoration Project (Big Bend Project)

The city of West Jordan Natural Habitat Restoration Project, referred to as the Big Bend Project, was the third project selected to implement the preferred alternative in the SSRP. While the current scope of the proposed project is more involved than was proposed in 1997, the restoration goals and criteria for evaluation and development of the project are the same as those originally stated in the SSRP. This section discusses project planning history and more recent coordination and scoping efforts.

Planning History

The Big Bend Project was originally proposed by the city of West Jordan in 1995, in response to the RFP issued in the 1995 Sharon Steel conceptual Restoration Plan (USFWS 1995). The lands in the 68 acre proposed project area had previously been used as pasture, with former wastewater settling ponds associated with a mink farm located on a portion of the northern half of the site (Figure 3). The Jordan River wraps around the northern and eastern boundaries of the project area, forming the "big bend" for which the site is named. Due to channelization and flood control efforts, the river is incised as much as 10 feet below the elevation of the floodplain, with dredged gravels (from flood-control efforts in the mid-1980's) piled to an additional 10-15 feet above that on the river banks on the southern end of the project area. As proposed, the project envisioned acquisition of properties in the project area; restoration of the river banks by removing non-native trees and shrubs, excavating sufficient material to "lay back" the river bank; and then planting the restored banks with native riparian vegetation. Other components of the project as proposed included acquisition of water rights, removal of invasive Russian olive trees across the entire property, and creation of tributary channels supplied by water from an adjacent irrigation canal to provide water for native vegetation planted across the floodplain. In addition to the city of West Jordan, other project cooperators included the Mitigation Commission, TreeUtah, Trust for Public Lands, Salt Lake County, US EPA, Wasatch Front Resource Conservation and Development Council, the National Fish and Wildlife Foundation, and Utah Power and Light Company (now Rocky Mountain Power). The project budget as proposed was \$2.1 million, with \$762,200 requested from the Sharon Steel settlement, to be used for property acquisition, project planning and management, and construction costs.

Land acquisition and project planning began soon after a cooperative funding agreement between the Service and the city of West Jordan was signed in 1997. The Mitigation Commission also acquired a key group of family-owned parcels (the "Richardson Parcels") totaling 43 acres, while the city of West Jordan acquired the 25-acre "Fur Breeders" parcel north of the Richardson Parcels using Sharon Steel and other funds. A total of \$105,000 of Sharon Steel funds was used for project planning, management and property acquisition in 1997 and 1998. However, during

the project design phase, it became apparent that the volume of materials that needed to be excavated for the bank restoration had been under-estimated. At this point, West Jordan and other project cooperators began exploring the option of creating a new, meandering channel across the floodplain that would involve a similar amount of excavation and construction at a similar cost, but would provide much more restoration benefit (improved hydrology and ability to support riparian vegetation).

The city teamed with the U.S. Army Corps of Engineers (ACOE) to fund the assessment, design and construction work through Water Resources Development Act (WRDA) and Section 206 of the Clean Water Act, with the intention that restoration on the re-contoured project site would be implemented with Sharon Steel funds.



Figure 3. City of West Jordan Natural Habitat Restoration Project Area (Big Bend Project area). Total area is 68 acres. Photo taken in October 2011, during a record high-water year, with water (at the level of the river's water table) present in remnant oxbow channels and ponds on the former floodplain.

In 1999, the city of West Jordan and the Service suspended work under the cooperative agreement while the ACOE performed a feasibility assessment and preliminary design, and undertook NEPA analysis of alternatives for the river reconstruction project. The ACOE issued a draft detailed project report and NEPA environmental assessment (DPR-EA) in 2003 (ACOE 2003). However, shortly before the DPR-EA was finalized the ACOE notified the Big Bend Project partners that all Section 206 and WRDA funding had been withdrawn nationwide for the foreseeable future due to policy changes at the national level. Because the lands had already been acquired, and the City remained committed to implementing the project with other funding sources and partners, the Sharon Steel Trustees elected to wait until a new project funding and implementation plan could be developed and then resume the project. An additional consideration in this decision was that other restoration sites on the Jordan River of equivalent

quality were becoming scarce because of development and increasing land prices. Consequently, the existing cooperative agreement between the Service and the City was allowed to expire in 2003 and the remaining funds from the agreement were returned to the NRDAR Fund.

In 2009, the ACOE notified the city of West Jordan that a reduced version of the WRDA/Section 206 program was being resumed, and that existing projects would be evaluated for current viability. As part of this effort, the ACOE updated the DPR-EA between 2009-2010, performing an updated cultural resources survey and an avian resource survey, and again produced a draft DPR-EA. However, before this draft could be reviewed and finalized, the ACOE announced that WRDA program funding was being discontinued with no resumption planned.

Coordination and Scoping

Concurrently with the ACOE's announcement of resuming WRDA funding in 2009, the city of West Jordan was also engaged in final planning for a section of the Jordan River Parkway Trail (JRPT) to be located on the western boundary of the project area. The JRPT is a 40-mile regional trail and parkway system that begins where the Jordan River flows out of Utah Lake in Utah County and runs north to the Salt Lake-Davis County line, where it connects to the Legacy Nature Trail that runs another 14 miles north to the Great Salt Lake. In 2009 the trail segment adjacent to the Big Bend project area was one of four yet-to-be completed gaps in the JRPT, with one of the reasons being uncertainties associated with the final design of the Big Bend restoration project. In 2010, the city of West Jordan applied for and received an assistance grant from the National Park Service's (NPS) Rivers, Trails and Conservation Assistance (RCTA) office, to complete planning and funding acquisition for the JRPT segment (NPS 2012).

This activity, along with the discontinuation of WRDA funding, led the City, the Sharon Steel Trustees, the Mitigation Commission, and other project partners to begin discussions in 2011 to determine feasibility of re-initiating the Big Bend Restoration Project. Those discussions led to the following decisions:

- The West Jordan City Council committed to:
 - Reinitiate project planning;
 - Provide a city employee as a liaison for the project; and,
 - Contract with a project design and planning consultant to develop a design concept that could be funded and implemented in phases (RiverRestoration 2015), and retain a consultant to provide technical project management and expertise.
- The Mitigation Commission committed to:
 - Provide use of their property (the Richardson Parcels) for the Big Bend Project;
 - Provide a portion of their property on the western boundary of the property for the placement of the Jordan River Trail alignment;
 - Fund a document review and feasibility assessment of the ACOE's DPR (ACOE 2003) to determine if existing conditions at the Big Bend site would still support construction of a new river channel and associated off-channel wetlands, (Allred Hydrology Associates 2013), and develop a rough cost estimate for the purposes of project scoping and fundraising;
 - Conduct NEPA planning for the use of their property for the Jordan River Trail (URMCC 2015); and

- Conduct NEPA planning for the use of their property for the Big Bend Restoration Project (URMCC 2018).
- The Service, with assistance from DOI's Office of Restoration and Damage Assessment, committed to:
 - Supply technical assistance to map weeds on the project site for the purposes of pre-construction weed control;
 - Supply technical assistance to the development of vegetation and avian community monitoring plans (conducted by NGO partners) to establish a pre-restoration baseline against which increases in natural resource services post-restoration can be measured;
 - Evaluate the suitability of the Big Bend Project as a restoration alternative for the Portland Cement sites (see Section 1.3);
 - Conduct NEPA planning to evaluate restoration alternatives under the updated project design, along with updating the 1997 SSRP, to provide information on the activities conducted under the 1997 SSRP and describe the changes in scope of the Big Bend Project between 1997 and 2018; and
 - Participate in discussions and efforts to raise additional funds for the project.

1.3. Portland Cement

The Portland Cement Kiln Dust sites consists of 5 separate locations in Salt Lake City and northern Salt Lake County where approximately 500,000 cubic yards of cement kiln dust (CKD) originating from the Portland Cement Plant in Salt Lake City were deposited as fill material between 1963 and 1983. These sites were identified as Kiln Dust Sites 1-5 (Figure 4). The Portland Cement Superfund Site, consisting of Sites 2, and 3 on approximately 70 acres is located in Salt Lake City Utah. The site is on the west side of Redwood Road (1700 west) at 1000 south, within a triangular area defined by Indiana Avenue, Redwood Road and the Jordan River overflow canal (Surplus Canal). Portland Cement Kiln Dust Sites 1, 4 and 5 were not listed on the National Priorities List and are classified as the Portland Cement Unlisted Sites (discussed in more detail below). Waste material at Sites 2 and 3 was mixed with soil and demolition debris and buried onsite. Several hundred tons of chromium-bearing bricks from Portland Cement's kiln were also discarded at the site. Cement kiln dust contains heavy metals including arsenic, lead, chromium, cadmium, and molybdenum.



Figure 4. Vicinity of Portland Cement Kiln Dust Sites 1, 2 & 3, 4 and 5 in northern Salt Lake City, Utah. Blue star is downtown Salt Lake City. Photo taken in 1977.

Hazardous substance releases were subsequently documented in onsite ponded water, and in storm drain and ditch water and sediment, as well as in shallow groundwater hydrologically connected to the nearby Jordan River Surplus Canal, which transports excess water from the lower Jordan River to Farmington Bay in the Great Salt Lake. EPA placed this site on the Superfund National Priorities List (NPL) in June 1986 (EPA 2012).

During roughly the same time frame, CKD from the Portland Cement plant had also been deposited at three other locations (Portland Cement Kiln Dust Sites 1, 4, and 5). Kiln Dust Site 1 was an approximately 15 acre site located west of the Salt Lake Airport on undeveloped property near the southeast shore of the Great Salt Lake. Wastes at this site consisted of 90,000 tons of CKD, over 100,000 cubic yards of contaminated soil, and 75 tons of chromium-bearing brick. Kiln Dust Site 4 consisted of over 4,000 cubic yards of CKD and contaminated soil deposited on 5 acres of land located at 1950 North Redwood Road. Kiln Dust Site 5 was located along the south side of Cudahay Lane just east of the Jordan River. Over 60,000 tons of CKD, 67,000 cubic yards of contaminated soil, and 50 tons of chromium-bearing brick were deposited on this 6-acre site.

1.3.1. Natural Resource Damages Settlement

A series of CERCLA and NRDAR settlement agreements were negotiated with the potentially responsible party Lone Star Industries, landowners who had accepted CKD on their properties, and prospective purchasers of those properties from 1995 through 1999. These funds settled the parties' potential NRDAR liability for natural resource injuries at the Portland Cement sites, and are to be used to restore, replace, or acquire the equivalent natural resources and their services

that were injured by hazardous substance releases from the five sites (USFWS 1993). DOI, as the Portland Cement Trustee, recovered \$200,000 from Lone Star Industries through a settlement in bankruptcy court, and another \$47,186 from settlements with the other parties, for a total of \$247,186. With the interest that has accrued on these recovered funds, there is now approximately \$407,000 available in the NRDAR Fund for Portland Cement restoration.

1.3.2. Natural Resource Injuries and Service Losses

Habitats and surface water resources in the vicinity of Kiln Dust Site 1 consisted of alkali flat uplands, seasonally flooded saltgrass wetlands and mud flats, several small ditches, Lee Creek, and the Great Salt Lake. These habitats are heavily used by a large number and variety of waterfowl, shorebirds, raptors and migratory birds that annually use the Great Salt Lake for breeding, foraging and spring and fall migratory stopovers. Wastes that had been deposited into piles at the site in 1981 and 1982 were partially submerged by the Great Salt Lake when it rose to historically high levels through the mid -1980s. While natural resource injuries at Kiln Dust Site 1 were not quantified, contaminant concentrations in water at the site were within a range that has been associated with reductions in aquatic invertebrate populations, which would adversely impact this resource's use as a food source by migratory birds.

While the Portland Cement Kiln Dust Sites 2 and 3 originally had upland and alkali flat habitats that provided habitat for many species of migratory birds, much of this habitat had been lost to development at the site prior to 1980. Remaining habitat at the site was injured by implementation of the remedy, which involved excavation and disposal of hazardous materials and grading of the site to prevent runoff into the adjacent Jordan River Surplus Canal. However, contamination of shallow groundwater at the site (hydrologically connected to the canal) resulted in releases of hazardous constituents into the canal, potentially impacting invertebrate and fish populations that provide food for migratory birds and waterfowl.

Kiln Dust Site 4 was a developed upland site, and while it originally (pre-development) provided habitat for migratory birds, these habitats were lost both due to development and remediation of the CKD on site. Shallow groundwater monitoring at the site showed low levels of arsenic, lead and chromium in water that could potentially recharge surface water in nearby irrigation ditches connected to the Jordan River.

Waste piles at Kiln Dust Site 5 were immediately adjacent to and within the floodplain of the Jordan River, adversely impacting riparian habitats used by migratory birds. Adverse impacts and potential injury to surface waters and aquatic habitats also occurred when the Jordan River flooded the area and carried off a portion of the CKD during record flooding in the mid-1980's.

1.4. Purpose of the Sharon Steel Restoration Plan and Environmental Assessment Addendum

As discussed in Section 1.2.3, in 1997 the Service completed the SSRP and proposed several restoration alternatives on behalf of the Sharon Steel Trustees (USFWS 1997). The preferred alternative selected for implementation involved three main projects, two of which have been implemented. The purpose of this Draft RP/EA Addendum is to update the planned

implementation measures and analyze regulatory compliance for the modified scope of the third project, the City of West Jordan Natural Habitat Restoration Project (Big Bend Project).

Most of the settlement funds for Sharon Steel and Midvale Slag were expended for planning, implementing, and monitoring the two restoration projects previously described in Sections 1.2.2 and 1.2.3 of this document. It is proposed that the remaining funds be used to implement the Big Bend Project.

In addition, this Draft RP/EA Addendum proposes a preferred restoration project alternative for the Portland Cement settlement funds. It is proposed that these monies and accrued interest be used, in combination with the remaining funds from the Sharon Steel settlement, for planning and implementation of the Big Bend Project. The next sections will analyze the proposed alternatives for the Portland Cement funds (Section 1.5) and will summarize the environmental consequences of the Big Bend Project (Section 2.0) as evaluated in the Mitigation Commission's Environmental Assessment for the project in "*Big Bend of the Jordan River Habitat Restoration and Federal Land Transfer Environmental Assessment*" (Big Bend EA), which is incorporated by reference in this document.

1.5. Proposed Restoration Alternatives for the Portland Cement Settlement

1.5.1. Introduction

As discussed in Section 1.3.1, restoration funds were obtained from a series of settlements with entities that had potential liabilities for natural resource injuries due to the release of hazardous materials associated with cement kiln dust waste from the Portland Cement Company in Salt Lake City that had been dumped or used as construction fill at five sites in northern Salt Lake City and Salt Lake County, Utah. All of these sites were near, or hydrologically connected to the Jordan River and other channels in the Jordan River watershed. The Portland Cement settlement funds (approximately \$407,000) will be used to implement habitat improvement activities that will restore the trust natural resources that were injured at the Portland Cement sites. In this section we analyze three proposed restoration alternatives for the use of these funds under the CERCLA NRDAR criteria (43 C.F.R. 11.82(d)). Based on these criteria, we have identified four factors to focus our analysis and determine the most effective way to restore injured natural resources using these funds. The four factors are:

- *The extent to which the alternative restores the natural resources that were injured at the Portland Cement sites; namely aquatic, wetland, and riparian habitats in the Jordan River watershed that support migratory birds and other wildlife.*
- *The location of the restoration alternative; namely the current land use of the areas where restoration will be performed, how that land will be used in the future, and the ability of the restoration alternative to provide natural resource services to migratory birds and other wildlife.*
- *Partners; namely the existence and interest of other parties that are pursuing restoration objectives in the potential restoration area. Partners are important for three reasons: 1) they can bring additional funds and (often) in-kind contributions of effort, expertise, and materials, which provides effective "leverage" to the use of NRDAR funds; 2) they may provide the site for restoration, as well as a vision of how*

NRDAR-related restoration efforts integrate with other appropriate purposes and uses of a site (e.g., human use such as nature parks and water trails, groundwater or surface water protection, etc.), and especially, 3) they are the entities upon whom the trustees can rely to maintain and manage the restored area in perpetuity.

- *Cost/Benefit*; namely, the amount of restoration of natural resource services that could be implemented with the available funds from the Portland Cement settlements (approximately \$407,000)

1.5.2. Alternative A: No Action

The CERCLA NRDAR regulations require that a No Action alternative be considered in the restoration alternatives analysis. This alternative serves as a baseline against which the other (action) alternatives are compared. Under the No Action alternative, the Portland Cement funds would not be utilized to implement restoration of the natural resources that were injured by the release of hazardous materials at these sites.

1.5.2.1. Project Description

If Portland Cement NRDAR funds are not released and utilized, restoration would not occur at the sites of injury (the Portland Cement sites), nor could restoration be implemented with these funds at other sites that have similar natural resources as those injured at the Portland Cement sites.

1.5.2.2. CERCLA Analysis

Under the No Action alternative, the funds in the Portland Cement NRDAR account would not be spent on restoration, and therefore no natural resources would be actively restored. The location of restoration under this alternative would be moot, as would the choice of restoration partners. While this alternative would not cost any money, it would also yield no benefit to the trust resources that were injured at the Portland Cement sites. Due to these factors in combination, the No Action alternative would not meet the purpose of the Portland Cement funds and the required restoration would remain unfulfilled.

1.5.3. Alternative B: Restoration within the Portland Cement Sites

Under this alternative, Portland Cement settlement funds would be used to restore resources at one or more of the four separate sites where natural resources were injured due to the release of hazardous constituents from cement kiln dust and other associated wastes.

1.5.3.1. Project Description

Under this alternative, restoration projects would be implemented at one or more of the four spatially discrete Portland Cement sites. Habitats for migratory birds that were injured at the sites included saltgrass wetlands and playa on the south shore of the Great Salt Lake (Kiln Dust Site 1), Jordan River riparian floodplain habitats (Kiln Dust Site 5), and aquatic habitats in ditches and canals that feed into the Jordan River and the Great Salt Lake (Kiln Dust Sites 2 and 3, and Kiln Dust Site 4). Three of these (Kiln Dust Sites 2 and 3, Kiln Dust Site 4, and Kiln Dust Site 5)

are within commercial/industrial areas in Salt Lake City and Salt Lake County, and have been completely developed. Kiln Dust Sites 2 and 3 are currently an office park and trucking terminal complex, Kiln Dust Site 4 is a parking lot that is used to store semi-tractor trailers, and Kiln Dust Site 5 is now within the footprint of the Legacy Highway, a major regional transportation corridor. Only Kiln Dust Site 5 is undeveloped, but the habitat in the area has been transformed from Great Salt Lake shoreline wetlands to uplands because the Great Salt Lake has shrunk in area from 2,456 square miles in 1986 (its maximum extent due to flooding in the mid-1980's) to 2,000 square miles currently. Consequently, the shoreline of the lake is currently about four miles to the west-southwest from the Kiln Dust Site 5. The land containing the Kiln Dust Site 5 is privately owned, and is located on a frontage road of Interstate Highway 80 within a commercial development zone that is currently being expanded to contain a state prison and commercial distribution warehouses.

1.5.3.2. CERCLA Analysis

As noted above, current conditions at three of the four spatially discrete Portland Cement sites provide very little in the way of natural resource function or service, and due to both their current and future conditions, there is very little prospect for restoring natural resource services at these sites. Additionally, there are no other partners with whom the Portland Cement Trustee could cooperate to leverage NRDAR fund dollars into greater restoration benefits for the cost. While the fourth spatially discrete site (Kiln Dust Site 1) falls within the Kennecott Inland Sea Shorebird Reserve mitigation property of the South Shore Preserve where habitat restoration opportunities may be available, there are partners already working to preserve the area, and restoration development is largely completed.

1.5.4. Alternative C: Contributing Funds to City of West Jordan Natural Habitat Restoration Project

Under this alternative, Portland Cement settlement funds would be used, in combination with the remaining Sharon Steel restoration funds to restore natural resources at the Big Bend Project site that are similar to those that were injured at the Portland Cement sites.

1.5.4.1. Project Description

Under this alternative, the funds from the Portland Cement settlements (approximately \$405,000) would be combined with the remaining funds from the Sharon Steel settlement (approximately \$500,000) to implement restoration at the Big Bend site (Figure 5), under the preferred alternative described in the Mitigation Commission's Big Bend EA (URMCC 2018). Of this combined amount (\$905,000), \$805,000 would be used to implement restoration at the Big Bend site, and approximately 10% (\$100,000) would be reserved for monitoring and adaptive management at the Big Bend and Jordan River Migratory Bird Reserve sites. This alternative involves a combination of actions pursued primarily to benefit migratory birds and other wildlife and other actions that provide a recreation benefit to the citizens of the city of West Jordan and Salt Lake County, Utah, as well as visitors. More information about the restoration actions included in this alternative is presented in Section 2.1.



Figure 5. Preferred Alternative “Lowered Floodplain with Meandering Channel” Restoration at the Big Bend site, identified by the Utah Reclamation Mitigation and Conservation Commission in their “Big Bend of the Jordan River Habitat Restoration and Federal Land Transfer Environmental Assessment” conducted under the National Environmental Policy Act.

The city of West Jordan is the lead partner for the Big Bend Project, but there is also a large and diverse group of project partners who are providing funding, expertise, project management and science support, including:

- DOI Agencies and offices including the Service, DOI Restoration Support Unit and National Park Service Office of Recreation Trails and Conservation Assistance (RTCA);
- The Mitigation Commission
- U.S. Environmental Protection Agency;
- Utah State agencies including the Department of Environmental Quality’s Divisions of Water Quality and Environmental Response and Remediation, Department of Natural Resources’ Divisions of Wildlife Resources and Forestry, Fire and State Lands, and the Utah Governor’s Office of Planning and Budget;
- The cities of Midvale and Sandy;
- Salt Lake County;
- Jordan River Commission;
- Private interests including North Jordan Irrigation Company and Rocky Mountain Power;
- Educational organizations including University of Utah, Utah State University and Tracy Aviary; and
- Utah Conservation Corps

1.5.4.2. CERCLA Analysis

Under this alternative, 68 acres of land on the west side of the Jordan River upstream from the Sharon Steel Mill and Midvale Slag sites will be restored for a variety of migratory bird, wildlife and compatible uses. An approximately one mile reach of the Jordan River will be hydrologically restored, which will provide suitable conditions to support a riparian floodplain forest that will provide habitat for migratory birds in the project area. The area between the old and new river channels (37 acres) will be restored and managed primarily as habitat for migratory birds and other wildlife. Human uses that encourage “connection with nature” will be supported by the project, including fishing, bird watching, walking and hiking, and canoeing/kayaking on the restored river reach.

While this alternative will not restore natural resources at the Portland Cement sites, the Big Bend site is in the same watershed (Jordan River) as the Portland Cement sites, and provides similar natural resource services as those that were formerly provided at these sites before their commercial development and use as hazardous material disposal sites. Alternative C, in comparison to habitat restoration opportunities discussed in Section 1.5.3.2 under Alternative B, best ensures that restoration funds are used to provide the maximum benefit for injured trust resources. This alternative also allows the Portland Cement funds to be leveraged through use on a project which has a robust set of partners, and for which much development and design effort and money has already been spent. This means that the cost/benefit ratio for the use of Portland Cement funds for this alternative is very high, as a very high percentage of the funding (more than 90%) will be put into “on the ground” restoration.

1.5.5. Preferred Alternative for Portland Cement

As discussed in Section 1.5.2.2, Alternative A, the No Action alternative would not restore natural resources, and is therefore not a preferred alternative. For the reasons discussed in Section 1.5.3.2, Alternative B, Restoration within the Portland Cement Sites, is a less efficient use of the available funds due to the commercial development and loss of habitat at three of the four spatially distinct sites of injury, and the reduced opportunity at Kiln Dust Site 1 for habitat restoration that has not already been completed. **Alternative C, Contributing Funds to the Big Bend Project, is the preferred alternative because it best meets the CERCLA NRDAR criteria identified in Section 1.5.1.** This alternative provides the most restoration of natural resources (one mile of riparian and aquatic habitats, 37 acres of restored habitat to be managed primarily to provide nesting, foraging and other habitats for migratory birds); is in a location that is within the same watershed and provides similar natural resource services as those that were injured at the Portland Cement sites; has a robust and active set of project partners; and is far enough along in the design and permitting process that a large percentage of the Portland Cement funds can be utilized for on the ground restoration.

2. ENVIRONMENTAL CONSEQUENCES OF THE BIG BEND PROJECT

2.1. Big Bend Project Description

The Big Bend Project includes two federal partners, the Mitigation Commission, which owns 43 of the 68 acre project site (63%), and the Service, which proposes to provide NRDA funds to support restoration of migratory bird habitat consistent with the goals and objectives of the 1995 and 1997 Sharon Steel Restoration Plans (USFWS 1995, USFWS 1997). As a federal agency, the Mitigation Commission is required to perform a NEPA analysis of alternatives for the proposed Big Bend Project. Their analysis, “*Big Bend of the Jordan River Habitat Restoration and Federal Land Transfer Environmental Assessment*” (Big Bend EA) (URMCC 2018) is being conducted concurrently with the Sharon Steel Trustees’ drafting of this addendum to the SSRP. The Mitigation Commission’s EA fully describes and analyzes four alternatives, and presents a preferred alternative, termed the “Meander Channel and Full Floodplain Option” (Figure 5). The restoration actions that are included as part of the Mitigation Commission’s preferred alternative are described fully in the Big Bend EA. Key actions that will benefit migratory birds and wildlife include:

- Hydrologic restoration of the Jordan River by redirecting it into a new channel across the Big Bend Project area. This channel will be excavated and constructed so the river flows within an approximately 300 foot wide floodplain, with gradually sloping banks leading back up to the current floodplain level. In addition to providing suitable conditions for riparian vegetation, the new channel will let the river spread out as its discharge volume increases, which will reduce the bed and bank erosion that is a major issue with the river’s current alignment. At high (flood) flows, both the new and old channels will be able to convey water and hold water in the floodplain, which will provide the benefit of reducing downstream flooding. This restoration will improve the stability and hydrologic function of the river throughout the project area, which will allow it to support other natural resource services that are required by migratory birds and other wildlife.
- Hydrologic restoration will also improve water quality through the Project area. The Jordan River is currently listed as impaired for total dissolved solids (TDS), *Escherichia coli* (a bacteria associated with pollutant sources such as sewage and animal wastes), elevated temperature, decreased macroinvertebrate communities and selenium. Restoration of the river channel including stabilization of streambanks and planting with native riparian vegetation will reduce the contribution of TDS in the Project area and reduce water temperatures by shading the river channel. Restoration actions will also increase habitat for aquatic life in the Project area.
- Plantings of trees and shrubs in the new floodplain that will provide a riparian gallery forest composed of multiple stories (e.g., lower canopy, mid-canopy, and upper canopy) of shrubs and trees (e.g., golden current, oakleaf sumac, coyote willows in the lower canopy; peach leaf willow, black hawthorn, choke-cherry in the mid-canopy; and Fremont cottonwood and box elder trees in the upper canopy) that support the nesting and foraging needs of a diverse group of migratory birds as well as other wildlife species.
- The designation of the northeastern portion of the project area (within the area defined by the old and new river channels) as a migratory bird and wildlife reserve, with limited human use and access. This area will be planted with riparian, wetland, and upland vegetation as appropriate to conditions and hydrology that will provide nesting areas, forage, and cover for birds and wildlife.
- Construction of small stream channels and wetlands to convey water into and out of an urban fishing pond. These plantings will provide some habitat for migratory birds and wildlife, although the degree of natural resource services provided will be reduced by human use of the area.

Other actions in the Big Bend EA's preferred alternative will improve and restore recreational and educational uses of the area that are supported by natural resources, including:

- Linkage to the Jordan River Parkway Trail on the western boundary of the project area. This trail is a major urban connector that will allow people to view and access the Big Bend Project without an automobile, which will aid somewhat in various local governments' efforts to reduce the use of cars in the Salt Lake Valley.
- A four-acre urban fishing pond that will be stocked and maintained by the Utah Department of Natural Resources' Division of Wildlife Resources. The pond will be designed to be as naturalistic as possible, with water being provided from a nearby irrigation canal through a system of streams and wetlands that will maintain or increase water quality into and through the pond. Upper canopy trees (e.g., Fremont cottonwood) will be planted around the pond to provide shade both for people, and to shade the water to minimize heat gain. The outlet of the pond will drain to the Jordan River through a constructed stream channel that will also be planted with riparian vegetation.
- A network of trails through the western half of the project site that will allow people to recreate on the accessible half of the project area. Interpretive features, such as a viewing hill (constructed of the fill excavated from the fishing pond), kiosks, and signage will help people understand the history and natural resource value of the site. The Jordan River is also designated as a water trail, and a boating trailhead may be constructed on the project area as well.

2.2. NEPA Analysis

The National Environmental Policy Act (NEPA) (42 USC § 4321 *et seq.*) requires that all federal agencies prepare a detailed statement for major federal actions that may significantly affect the quality of the human environment. CERCLA NRDA regulations require trustees to prepare a restoration plan. The restoration plan and NEPA environmental analysis requirements were combined in the development of the Sharon Steel RP (USFWS 1997), and are updated as part of this Draft RP/EA Addendum. We hereby fully adopt and incorporate by reference the "*Big Bend of the Jordan River Habitat Restoration and Federal Land Transfer Environmental Assessment*" (Big Bend EA).

The Big Bend EA identifies the Big Bend Project Site as valuable habitat in need of restoration. As a result of channelization, wetland and riparian vegetation condition along the Jordan River has deteriorated. Channel bed degradation has also resulted in a lowering of the river's water table (water surface elevation) with respect to the elevation of the floodplain, which has resulted in loss of connection between the root zone of floodplain vegetation and shallow groundwater associated with the river. As a result, most of the site is currently vegetated with non-native species that are tolerant to these conditions but that provide relatively poorer habitat value to native wildlife compared to native species.

The Big Bend EA analyses four project alternatives: (1) Lowered Floodplain with meandering Channel Alternative (the preferred alternative); (2) Perched Channel Small Floodplain Alternative; (3) Tributary Stream No Floodplain Alternative; and (4) No Action alternative.

Alternative 1: Under Alternative 1, the main channel of the Jordan River would be realigned into a new meandering channel located west of its present location. Approximately 90% of the flow of the Jordan River would be directed into the new channel with the remainder of the flow

continuing down the existing channel. An urban fishing pond, viewing platform, and a limited network of trails would also be constructed, and 37 acres of the project area on the east side of the new Jordan River channel would focus on habitat restoration, including planting and irrigation.

Alternative 2: This alternative is similar to Alternative 1, but smaller in scope and cost. A split channel would be excavated to a shallower depth, would have a narrower floodplain, and would divert a smaller portion of Jordan River flow compared to Alternative 1. Under Alternative 2 the urban fishing pond and trail system would be the same as Alternative 1, and the viewing platform would be simpler and smaller in scale. Habitat restoration would be similar to that of Alternative 1, with the exception that more riparian/upland habitat and less wetland/riverine habitat would be restored because of the reduced floodplain area.

Alternative 3: This alternative is the smallest in scope of the three action alternatives. Under this alternative the existing main channel of the Jordan River would remain in its present location and a tributary stream would be constructed from a diversion off the North Jordan Canal that would meander north across the property and empty back into the Jordan River. The trail system would be similar to Alternatives 1 and 2, but the urban fishing pond would be smaller and there would be no viewing platform. The habitat restoration would be the same as Alternatives 1 and 2, but a higher proportion of the planted areas would be upland vegetation.

Alternative 4: The No Action alternative, serves as a basis against which to compare the other alternatives. Under Alternative 4, noxious weeds would continue to be managed on the federal parcel, at least on a sporadic basis, but native vegetation would not be re-established. Wildlife habitat would not be expected to improve over existing conditions and would most likely degrade without an integrated and focused management effort.

The environmental effects of each of the four alternatives were analyzed. Specifically, the Big Bend EA analyzed the alternatives' effects on: wildlife habitat, vegetation and wetlands; fish and aquatic resources; special status plants, fish, and wildlife; hydrology; water quality; recreation; water rights; land ownership/land use; socioeconomics; conceptual cost; transportation; visual; cultural and paleontological; and climate and air quality. The environmental effects of each alternative are summarized in Table 1.

Based on this analysis, the Mitigation Commission determined that Alternative 1, Lowered Floodplain with meandering Channel Alternative, is the preferred alternative.

Table 1. Summary of Environmental Effects Evaluated for Alternatives 1, 2, 3 and the No Action Alternative from the “Big Bend of the Jordan River Habitat Restoration and Federal Land Transfer Environmental Assessment” (URMCC 2018).

Resource	Alternative 1 (Preferred Alternative)	Alternative 2	Alternative 3	No Action Alternative
Physical & Biological Resources				
Wildlife habitat, vegetation and wetlands	Creates approximately 15 acres of wetland and riparian vegetation. Has the largest construction area footprint and therefore the greatest short and mid-term impacts. Approximately 48 acres (71% of project area) would be disturbed during construction.	Creates approximately 6 acres of wetland and riparian vegetation. Approximately 37 acres (54% of project area) disturbed during construction.	Creates approximately 1.1 acres of wetland and riparian vegetation. Approximately 31 acres (45% of project area) disturbed during construction.	No new riparian/ wetland habitats created and existing habitat continues to provide ecological services at reduced level. Non-native vegetation still selectively removed resulting in some short and mid-term impacts.
Fish and Aquatic Resources	Fish numbers may increase in newly restored section of the river as holding habitat area improves. Utah Division of Wildlife Resources would stock the fishing pond with species suitable to the prevailing water quality and temperature.	Same as ALTERNATIVE 1	No Change in numbers of fish in existing channel. Utah Division of Wildlife Resources would stock the fishing pond with species suitable to the prevailing water quality and temperature.	No Change
Water quality	Measures would be implemented to stabilize eroding bank on the north end of the project area at the "Big Bend", which contributes tons of fine sediments to the Jordan River. Erosion rates reduced and water quality improved. Short-term impact, lasting 24 to 36 hours, would occur when the existing channel is breached and water is initially diverted into the newly constructed river channel.	Same as ALTERNATIVE 1 Similar short term impacts to Alternative 1. Shorter length would expose less disturbed soils to new flows, thus decreasing short-term impacts relative to Alternative 1.	Same as ALTERNATIVE 1 Smaller short-term impacts compared to Alternative 1, with much smaller channel length and flow.	Water quality in the Jordan River would continue to degrade as eroding banks in the project area would continue to contribute pollutants and tons of fine sediments to the system.
Special Status Plants, Fish and Wildlife	No anticipated impacts on threatened, endangered or special status species.	Same as Alternative 1	Same as Alternative 1	No Change

Table 1 (continued). Summary of Environmental Effects Evaluated for Alternatives 1, 2, 3 and the No Action Alternative from the “Big Bend of the Jordan River Habitat Restoration and Federal Land Transfer Environmental Assessment” (URMCC 2018).

Resource	Alternative 1 (Preferred Alternative)	Alternative 2	Alternative 3	No Action Alternative
Socioeconomic Resources				
Recreation	Substantial increase in recreational opportunities with construction of 4-acre fishing pond, Americans with Disabilities Act (ADA)-compliant trails, viewing platform, interpretive facilities, beach, restrooms and parking.	Same as ALTERNATIVE 1	Similar to ALTERNATIVE 1 except 3-acre pond instead of 4-acre pond, no viewing platform or parking. All trails would be unpaved but ADA-compliant.	Recreational opportunities limited to current uses, e.g., use of Jordan River Parkway Trail that runs along the western boundary of the property.
Water Rights	Requires approximately 90 acre-feet of water annually for the project with an additional 16 acre-feet required for the initial filling of the pond. Requires a non-consumptive water right of 1.9 cfs inflow to maintain water quality in the pond.	Same as ALTERNATIVE 1	Approximately 85 acre-feet of water required annually for the project with an additional 10.5 acre-feet required for the initial filling of the pond. Would require 1.22 cfs inflow to maintain water quality.	No additional water use required beyond existing irrigation needs.
Land Ownership/ Land Use	The project area managed for habitat restoration, protection and compatible recreational uses. Land uses on adjacent properties would remain unaffected by the project. That portion of the 43-acre federal parcel making up the bed and bank of the new river channel (about 4 acres) would be transferred to State of Utah. The remaining 38.75 acres would be transferred to the city of West Jordan.	Same as Alternative 1 except with a slightly smaller and less sinuous river channel, only 2.9 acres would be transferred to State of Utah with the remaining 40.1 transferred to the city of West Jordan	All 43 acres of the federal parcel would be transferred to the city of West Jordan and managed for the protection and enhancement of the riverine ecosystem and associated compatible recreational uses	The 43-acre federal parcel would not be transferred to the city of West Jordan and the Mitigation Commission would not authorize the city of West Jordan for the construction of the project on federal lands. The project would likely not be constructed because of limited land area available for the project (the 25-acre West Jordan parcel). The 43-acre parcel would remain in federal ownership.

Table 1 (continued). Summary of Environmental Effects Evaluated for Alternatives 1, 2, 3 and the No Action Alternative from the “Big Bend of the Jordan River Habitat Restoration and Federal Land Transfer Environmental Assessment” (URMCC 2018).

Resource	Alternative 1 (Preferred Alternative)	Alternative 2	Alternative 3	No Action Alternative
Socioeconomic Resources (cont.)				
Socio-economics	No anticipated adverse impacts on adjacent property owners anticipated. The project would protect open space from development and provide wildlife viewing and outdoor recreational opportunities to the community, and increase visitation to the area which would decrease its desirability for homeless encampments, all of which enhance quality of life for many residents.	Same as Alternative 1	Similar to Alternative 1, although scope of recreational development not as great and anticipated wildlife habitat and viewing opportunities not as great. Access to the site would be from existing dispersed locations; no new parking area would be provided.	No anticipated impacts
Conceptual Cost	\$8.5 million	\$5 million	\$3.1 million	No new incremental costs above existing management costs.
Transportation	Less than 1% increase in westbound traffic on 9000 South. No reduction in level of service.	Same as ALTERNATIVE 1	No centralized parking would be provided and users would access the site from dispersed locations. Therefore, no reduction in level of service.	No additional impacts to traffic or level of service
Visual	Project Area remains essentially non-visible from outside the project area. Views within the project area are enhanced through architectural design and siting of trails, berms and structures such as the viewing platform.	Same as ALTERNATIVE 1	Same as ALTERNATIVE 1	Project Area will retain the look of undeveloped pastureland while Action Alternative would have more riparian and native vegetation. Future disposition of the project area unknown.
Cultural & Paleontological	No anticipated Impacts	Same as ALTERNATIVE 1	Same as ALTERNATIVE 1	No Change

Air Quality and Climate and	No long-term impacts to air quality. Temporary emissions during construction are significantly below the federal de minimis threshold levels established by the EPA for air quality. Fugitive dust generated by a construction activities mitigated through best management practices. Revegetation and restoration would increase vegetative biomass, a carbon sink. Scale of the project would not have a significant effect on climate change.	Same as ALTERNATIVE 1	Similar to ALTERNATIVE 1 . Scale of temporary impacts from construction smaller than ALTERNATIVE 1 with reduced level of construction.	No Change
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3. PROJECT IMPLEMENTATION AND FUNDING

Following project re-initiation in 2011, planning and fund-raising began in earnest in 2012. To date, the city of West Jordan has raised approximately \$610,000 from partners and stakeholders identified in Section 1.2.4. About half of this amount (\$300,000) has been spent to date for project planning, engineering design for the various aspects of the project (overall design, urban fishing pond design, infrastructure design), permitting, pre-restoration noxious weed control, and pilot restoration projects in areas on city-owned land that will not be impacted by the channel reconstruction or other project improvements. The other half has been spent primarily on weed control and implementation of planting pilot projects to determine the most successful planting methods and species to be used as well as to start increasing natural resource services in areas that will not be disturbed by the construction outlined in this plan. The city anticipates raising another \$569,000 to be spent along with Sharon Steel settlement funds in 2018 and 2019 (Table 2).

Table 2. Past Funding Sources and Uses, City of West Jordan Natural Habitat Restoration Project (Big Bend Project).

Grantor	Grant	Fund Use	Fiscal Year	Funds Available
Utah Division of Wildlife Resources	Watershed Restoration Initiative	Engineering Feasibility and 30% Project Design	2014	\$150,000.00
USEPA	Five-Star Grant	Weed Control, Pilot Restoration	2014	\$50,000.00
Jordan River Commission	Large Grant	Vegetation management and design	2015	\$81,000.00
Jordan River Commission	Community Connections	Design for Access Road and Trailhead	2015	\$58,000.00
Utah Department of Agriculture and Food	Invasive Species Management (FY16)	Weed control and revegetation	2016	\$22,950.00
Utah Division of Wildlife Resources	Watershed Restoration Initiative	Design of pond and revegetation	2016	\$60,000.00
Rocky Mountain Power	Local grant	Weed control on Rocky Mountain Power property	2016	\$15,000.00
Utah Department of Agriculture and Food	Invasive Species Management (FY17)	Weed control and revegetation	2017	\$43,464.02
Jordan River Commission	Tree fund	Habitat patches (revegetation)	2017	\$3,000.00
Utah Division of Water Quality	Nonpoint Source Reduction (FY18)	Pilot bank stabilization project	2018	\$36,000.00
Utah Division of Fire, Forestry & State Lands	Bank stabilization fund	Pilot bank stabilization project	2018	\$50,000.00
			TOTAL	\$569,414.02

Construction of the urban fishing pond (“Phase 3”) is anticipated to begin in the fall of 2018. This phase will also include construction of site infrastructure such as access roads, trailheads, sanitary sewer, irrigation system, etc. Phase 4 will kick off in 2019 with the completion of a final construction design for the restored river channel and installation of a site-wide irrigation system that will support both riparian vegetation in the restoration area and turf in public areas adjacent to the Jordan River Trail. The City of West Jordan has committed \$500,000 of their own funds, and is continuing their efforts to obtain the additional funding required (approximately \$700,000) for Phase 4, from a variety of state, federal and private sources. A condensed funding plan showing how funds from West Jordan, the Service and other project cooperators will be used is provided in Table 3.

Table 3. Phase 4 River and Riparian Habitat Projected Funding and Implementation, 2019 – 2022, Big Bend Project. Note: Year 1 begins July 1, 2018

Source	Amount	Notes
YEAR 1 (2019)		
West Jordan	\$ 50,000	Begins July 1, 2018; Project Administration with Phase 3
USFWS NRDA	\$150,000	Irrigation installation for habitat and managed areas
Other Cooperators & Grants (Utah Dept. of Agriculture & Food - UDAF)	\$ 15,000	Riparian improvements, non-native vegetation removal
YEAR 2 (2020)		
West Jordan	\$ 50,000	Project Administration
USFWS NRDA	\$ 150,000	River and riparian final design and administration
Other Cooperators & Grants (UDAF, Jordan River Commission- JRC)	\$ 65,000	Implementation of river and riparian improvements
YEAR 3 (2021)		
West Jordan	\$ 50,000	Project administration and design
USFWS NRDA	\$ 250,000	Implementation of river and riparian improvements
Other Cooperators & Grants (UDAF, JRC)	\$ 95,000	Implementation of river and riparian improvements
YEAR 4 (2022)		
West Jordan	\$ 350,000	Project Administration and design of river and riparian
USFWS NRDA	\$ 150,000	Implementation of river and riparian improvements
Other Cooperators & Grants (JRC, National Fish & Wildlife Foundation, State of Utah, multiple grants)*	\$ 530,000	Implementation of river and riparian improvements, construction of river access points, project implementation
TOTALS	\$ 1,905,000	
Contributions:		
City of West Jordan	\$ 500,000	
NRDA Fund	\$ 805,000	
Other Grants & Funds	\$ 705,000	

4. OPERATIONS AND MONITORING

4.1. Operations

During and following restoration at the Big Bend site, the city of West Jordan will be primarily responsible for the operation of the site, including maintenance of recreational facilities and restored habitat areas. Other partners will be involved with these activities, for example the Utah Division of Wildlife Resources will be primarily responsible for stocking the urban fishery with fish species that are suitable for seasonal water temperature and habitat conditions. As construction and restoration operations at the site are completed, an Operations Plan will be developed by the city in consultation with other partners and cooperators.

4.2 Monitoring

Monitoring is an essential component of all phases of habitat restoration for several reasons:

- To gain an understanding of the site's natural resource services, values and challenges before restoration begins, and also to serve as a point of comparison for subsequent monitoring to determine the extent to which restoration of these values has occurred (pre-project baseline monitoring).
- To determine the performance and effectiveness of restoration measures during and immediately following completion of project activities (3-5 years). This follow-up monitoring documents changes in habitat and wildlife use as the area matures, and also provides early warning of emerging problems that can undermine the success of the project so that they can be addressed effectively and economically (short-term implementation and effectiveness monitoring).
- Over the longer term (5+ years), to determine if the restoration has replaced the natural resource values that were lost due to the injury that initiated the NRDA process, and to track and document the progress of restoration objectives such as increasing the number of migratory birds nesting on the site. This monitoring also serves to identify emerging management issues so they can be responded to early and effectively (long-term validation monitoring).

The restoration goals for the Big Bend site stem from the overall goals stated in the Sharon Steel Natural Resource Conceptual Restoration Plan (USFWS 1995), namely to “restore, enhance, replace, and/or protect appropriate natural, functioning habitats along the Jordan River corridor for the benefit of trust resources,” and “to ensure the project provides benefits to the trust resources in perpetuity.” While this plan stated that “other values such as recreation or improved water quality are secondary to this primary purpose of natural resource recreation,” these are also important goals to be considered in restoration success monitoring at the site.

More specifically at the Big Bend site, goals chosen for monitoring may include:

- Improving floodplain hydrology and water quality to support riparian, wetland and aquatic habitats;
- Improving migratory bird habitat on the Site;
- Improving public enjoyment of and engagement with the outdoors through nature-oriented activities such as fishing and bird-watching;

- Improving public education and volunteer opportunities through engagement with schools, volunteer organizations and other stakeholders; and,
- Gaining information about the site and improving public awareness of natural resource values and management through Citizen Science.

A final Restoration Monitoring Plan for the Big Bend site will be developed between now and the completion of restoration construction (ca. 2023). Based on the final monitoring goals chosen, the plan will include the identification of monitoring “targets” (desired outcomes, such as an increase in species richness and abundance of migratory birds, increased cover and diversity of riparian low, mid, and high-canopy tree species, decreased sedimentation and increased dissolved oxygen in the Jordan River, and increased human use of the site for recreation and education). Goals that describe the desired future state of the targets will then be set, such as reestablishment of a riparian floodplain forest that supports breeding neotropical migratory songbirds and the food chain they rely on. Finally, monitoring objectives will be established for each target area. These objectives will state the target, the desired outcome (e.g., increase, decrease, or maintain), the magnitude of the effect (e.g., a 40% increase in canopy cover), and the time frame within which the effect is anticipated. Objectives will also be “SMART” (Specific, Measurable, Achievable, Reasonable and Time-bound). A generic monitoring framework that will be used to guide development of the monitoring plan is presented in Table 4.

The Restoration Monitoring Plan will stem from, and incorporate, the considerable amount of pre-restoration monitoring that has been implemented at the Big Bend Site in the last 5 years. Avian point-count monitoring has documented the current species abundance (numbers) and richness (species diversity) at the site, and revealed that while habitats at the site are degraded, it is also a large piece of open land with mixed forest and grassland adjacent to a river, with 87 bird species documented in 2017 (Farr 2017). This monitoring has also informed restoration planning, such as a decision to leave larger non-native trees (primarily Russian olive, *Eleagnus angustifolia*) standing on the site until planted native trees have grown in size enough to replace them, and will continue to inform site management in the future. Vegetation monitoring has been performed to document existing plant communities and to identify areas where invasive/noxious vegetation needs to be treated in order to reduce the weed seed bank before restoration starts; this data has also been used to evaluate the relationship between avian use of the site and vegetation types (Cline et al. 2016). The Restoration Monitoring Plan will also be coordinated with other monitoring efforts at the Big Bend site, such as water quality monitoring to track the impacts of hydrologic and vegetative restoration on pollutant loading, temperature, dissolved oxygen and instream aquatic habitat and macroinvertebrate populations.

Table 4. Monitoring Framework for Restoration Success Monitoring at the Big Bend Project site, West Jordan, Utah

Essential Monitoring Plan Components	MONITORING STEP			
	Pre-Project (Baseline) Monitoring	Implementation Monitoring	Effectiveness Monitoring (3-5 years)	Validation Monitoring (5+ years)
OBJECTIVE:	Document pre-construction conditions.	Document if the project implementation occurred according to design plans	Document if the main ecological or human-use outcomes were achieved	Document if the main ecological or human-use outcomes persist into the future
PERFORMANCE CRITERIA:	For each monitoring step, include at least one specific performance criterion to evaluate success as monitoring progresses.			
ORGANIZATIONS:	For each monitoring step, record the person or organization that is responsible for conducting the monitoring as well as any related assessment or analysis of monitoring data.			
SCHEDULE:	For each monitoring step, outline a schedule for completion of monitoring tasks, including when it occurs in the overall process, and when it occurs seasonally.			

Notably, most of the monitoring that has been conducted at Big Bend to date has been performed primarily by volunteer “citizen scientists” guided by subject matter experts. The final monitoring plan for the Big Bend Project will continue to incorporate “Citizen Science” to the extent feasible in order to achieve one of the restoration goals of increasing long-term interest and stewardship for the site. Current monitoring partners for the Big Bend Project include West Jordan City, RiverRestoration, Inc., Tracy Aviary, Mark Coles-Richie, Utah State University Water Watch and the Utah Department of Environmental Quality Division of Water Quality.

5. PUBLIC PARTICIPATION

Under the CERCLA NRDA regulations and NEPA, the natural resource trustees shall notify the public and any federal, state, and local government agencies that may have an interest in the activities analyzed in this RP/EA Addendum. A notice of the availability of the Draft RP/EA Addendum will be published in the following local newspapers:

Salt Lake Tribune sltrib.com (801)-204-6100	Deseret News Deseretnews.com (801) 237-2135	West Jordan Journal westjordanjournal.com (801) 254-5974
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Copies of the Draft RP/EA Addendum will be made available at the following locations:

University of Utah Library
(federal document repository)
J. Willard Marriott Library
295 S 1500 E
Salt Lake City, UT 84112

West Jordan City Hall
8000 S. Redwood Road
West Jordan, UT 84088

U.S. Fish and Wildlife Service
Ecological Services
Utah Field Office
2369 West Orton Circle, Suite 50
West Valley City, UT 84119
(801) 975-3330

West Jordan Library
8030 S 1825 W
West Jordan, UT 84088

An electronic version of the Draft RP/EA Addendum will be posted on DOI's Restoration Program website (<https://www.doi.gov/restoration/news/>).

The Sharon Steel and Portland Cement Trustees welcome input from the public in evaluating the likely success of the proposed action in making the environment and the public whole for losses suffered from the hazardous substance releases. This Draft RP/EA Addendum will be available for public review and comment for 30 days from the date of publication of the notice of availability. The due date for receipt of comments will be published in the notice of availability of the Draft RP/EA Addendum. Comments that are received during the 30-day public comment period for this draft document, and Sharon Steel and Portland Cement Trustees' responses to those comments, will be presented in the final RP/EA Addendum. Comments may be addressed to:

Ms. Chris Cline
Sharon Steel Restoration Project Manager
U.S. Fish and Wildlife Service
Utah Ecological Services Field Office
2369 W. Orton Circle, Suite 50,
West Valley City, UT 84119

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